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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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CHRISTIE, PARKER & HALE, LLP
PO BOX 7068
PASADENA, CA 91109-7068

EXAMINER	
KADING, JOSHUA A	

ART UNIT	PAPER NUMBER
2661	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/692,554	LEBLANC ET AL.	
	Examiner	Art Unit	
	Joshua Kading	2661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 December 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *See Continuation Sheet* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15,17-21,23,27-31,33-39,41-44,46,48-54,56-60,62,64,66-71,73-76 and 78-88* is/are rejected.

7)☒ Claim(s) *31 and 85* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 December 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *12-06-04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 31 and 85 are objected to because of the following informalities:

Regarding claim 31, "separating means for separating" should be changed to --means for separating--; "determination means for determining" should be changed to --means for determining--; and "detection means for detecting" should be changed to --means for detecting--.

Regarding claim 85, line 2, "to the estimate power" should be changed to --to estimate power--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. Claims 1, 3, 5, 8, 9, 11, 14, 17, 27, 31, 35, 46, 48, 50, 53, 56, 64, 66, 70, 78, 79, 81-83, 87, and 88 are rejected under 35 U.S.C. 102(a) as being anticipated by U.S. Patent 5,949,874, Mark.

Regarding claims 1, 46, and 64, Mark ('874) discloses "a computer-readable media embodying a program executable by a computer (*col. 8, lines 33-39*)" including "a

data transmission system, comprising: a telephony device having a composite signal output comprising a plurality of components (*figure 4A, element 4 has a composite signal output as that of figure 4B*); and a signal processing system coupled to the telephony device (*figure 4A, element 8*), the signal processing system comprising a detector to separate one of the components from the composite signal (*figure 4A, element 515 and 518*), sample a portion of the separated component (*col. 16, lines 44-46 where it is inherent that converting the analog tones to digital data comprises sampling the analog tone to obtain sample points used in further digital processing*), and detect from the sampled portion of the separated component whether the separated component comprises a tone (*col. 17, lines 32-41*).

Regarding claim 8, Mark ('874) discloses "a method of dual tone signal detection in a composite signal having first and second components (*figure 4B where the signal 600 has a plurality of different components where the DTMF signal has a dual tone structure comprising high and low frequencies*), comprising: separating the composite signal into its first and second components (*figure 4B, where each component is handled separately, for example component 604 is used to handle the convey the destination of the signal this can be further read in col. 17, lines 3-23*); detecting from a portion of the first component whether the first component comprises a first one of the dual tones (*col. 10, lines 12-30 describes that the dtmf signal component of figure 4B where a first tone of the component is further detected as read in col. 11, lines 14-28*); and detecting from a portion of the second component whether the second component

comprises a second one of the dual tones (*col. 10, lines 12-30 describes that the dtmf signal component of figure 4B where a second tone of the component is further detected as read in col. 11, lines 14-28*)."

Regarding claim 81, Mark ('874) discloses "a system for detecting a tone in a composite signal having a plurality of components (*figure 4B where the signal 600 has a plurality of different components*) comprising: a filter to separate one of the components from the composite signal (*figure 4A, element 515 is used to demodulate the tones as described in col. 17, lines 32-36, it is further noted that demodulation inherently contains filtering to separate unwanted elements such as noise from the signal data, therefore the demodulator has the function of a filter*); a sampler to sample a portion of the separated component (*col. 16, lines 44-46 where it is inherent that converting the analog tones to digital data comprises sampling the analog tone to obtain sample points used in further digital processing*); and a detector to detect from a portion of the separated component whether the separated component comprises the tone (*figure 4A, element 515 and 518 as read in col. 17, lines 32-41*)."

Regarding claims 14, 31, and 53, Mark ('874) discloses a computer-readable media embodying a program executable by a computer (*col. 8, lines 33-39*)" including "a system for detecting a tone in a composite signal having first and second components (*figure 4B where the signal 600 has a plurality of different components where the DTMF signal has a dual tone structure comprising high and low frequencies*), comprising:

means for separating the composite signal into its first and second components (*figure 2B, element 302 is shown separating the signal into two components*); means for determining a frequency for each of the separated first and second components (*figure 2B, elements 308 and 310; the description of elements 308 and 310 is read in col. 11, lines 14-28*); and means for detecting as a function of the determined frequency for each of the first and second components whether either of the first and second components comprises the tone (*figure 2B, element 312; the description of element 312 is read in col. 11, lines 29-42*)."

Regarding claims 17, 35, and 56 Mark ('874) discloses, "separating means comprises a first bandpass filter to pass the first component and a second bandpass filter to pass the second component (*figure 2B, element 304; col. 10, lines 12-21*) and a second bandpass filter to pass the second component (*figure 2B, element 306; col. 10, lines 12-21*)."

Regarding claims 3, 9, 27, 48, and 66, Mark ('874) further discloses, "the separated component comprises first and second portions, and the signal processing system further comprising a state machine to invoke the detector to detect the tone in the second portion of the separated component (*figure 2B, element 104 acts as a state machine by controlling the tone detector in response to signals that indicate a change in state, this can be read in col. 9, lines 34-44 and 54-58*)."

Regarding claims 5, 11, and 50, Mark ('874) further discloses, "formatting the first component into first and second frames, the first frame preceding the second frame in time (*figure 3A, which represents a part of the DTMF signal of figure 4B and where each component has been formatted into at least two frames separated in time, for example frames 500 and 502*), each of the first and second frames having first and second portions (*figure 3A, each frame 500 and 502 has at least two portions, elements 501 and 503*), and wherein the detection of the first one of the dual tones comprises detecting from the second portion of the first and second frames whether the first component comprises the first one of the dual tones (*col. 11, lines 14-28 describes the detecting the tone in the corresponding portion, each low and high frequency tone is detected separately and thus the tone is determined to be a valid tone from the corresponding second portion*)."

Regarding claims 78, 82, and 87, Mark ('874) further discloses, "means for estimating a characteristic of each of the first and second components, the detection means detecting whether either of the first and second components comprises the tone further as a function of the estimated characteristic for each of the first and second components (*figure 3A, where the amplitude or energy of each portion is a unique characteristic to that portion and helps to define that portion, this is carried out by element 302 of figure 2B and a further description of amplification can be found in col. 13, lines 18-35*)."

Regarding claims 79, 83, and 88, Mark ('874) further discloses, "the characteristic comprises power (*figure 3A and col. 13, lines 18-35 where amplitude or energy is the power of the portion*)."

Regarding claim 70, Mark ('874) further discloses, "wherein the telephony device comprises a telephone (*figure 4A, element 4*)."

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 4, 6, 10, 12, 21, 28, 49, 51, 60, 67, 80, and 84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mark (U.S. Patent 5,949,874).

Regarding claims 4, 6, 10, 12, 28, 49, 51, and 67, Mark ('874) lacks "wherein the first portion precedes the second portion in time for each of the first and second frames." Although Mark ('874) does not explicitly disclose that the first portion precedes the second portion in time, it would have been obvious to one of ordinary skill in the art to do this as a matter of design choice. The motivation being that, for example, the first position preceding the second portion in time holds no advantage over the second

portion preceding the first portion in time or even over both portions occurring at the same time as in Mark ('874) (*figure 3A*), it is merely a matter of designer preference.

Regarding claims 21, 60, 80, and 84, Mark ('874) explicitly lacks "comparing a ratio of the power estimation for the first and second components to a threshold." Although Mark ('874) does not explicitly disclose the "ratio", he does disclose that the difference between the first and second components, or the twist, is compared against a threshold (*col. 13, lines 56-67*). It would have been obvious to one with ordinary skill in the art at the time of invention to have the ratio of the power estimates compared against a threshold instead of the difference as a matter of design choice. The reason is because the object of comparing the two components power estimates is to determine if they fall within an acceptable range. Whether this is done using ratios or differences is up to the designer, the same result of identifying where the components lie relative to a threshold is achieved. The motivation for wanting to know how the components compare to a threshold is so that negative effects of too much "twist" can be avoided (*col. 11, lines 1-7*).

6. Claims 7, 13, 29, 30, 52, 68, and 69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mark ('874) in view of Bremer et al. (U.S. Patent 5,311,578).

Regarding claims 7, 13, 29, 52, and 68, Mark ('874) further discloses "formatting the first component into first and second frames, the first frame preceding the second

frame in time (*figure 3A, which represents a part of the DTMF signal of figure 4B and where each component has been formatted into at least two frames separated in time, for example frames 500 and 502*), each of the first and second frames having first and second portions, the first portion of the frame precedes the second portion of the [frame] in time for each of the first and second frame (*figure 3A, each frame 500 and 502 has at least two portions separated in time from one another, elements 501 and 503*)."

However, Mark ('874) lacks what Bremer discloses "bypassing the detection step of the first one of the dual tones for the first portion of the second frame if the detection step for the first one of the dual tones does not detect the first one of the dual tones in the second portion of the first frame (*figure 4, steps 510 and 525 where in step 510 there is no tone detected, thus it skips all other portions looking for tones and goes to step 525*)."

It would have been obvious to one with ordinary skill in the art at the time of invention to include the bypassing of the portion for the purpose of continuing on with processing of information. The motivation for continuing on with the processing of information is so that resources are not wasted (*Bremer, col. 6, lines 45-47 the not wasting resources is implied by the fact that there is a time limit associated with the detection of a tone*).

Regarding claims 30 and 69, Mark ('874) and Bremer lack "wherein the first portion precedes the second portion in time for each of the first and second frames." Although Mark ('874) and Bremer do not explicitly disclose that the first portion

precedes the second portion in time, it would have been obvious to one of ordinary skill in the art to do this as a matter of design choice. The motivation being that, for example, the first position preceding the second portion in time holds no advantage over the second portion preceding the first portion in time or even over both portions occurring at the same time as in Mark ('874) (*figure 3A*), it is merely a matter of designer preference.

7. Claims 15, 23, 33, 38, 39, 41, 54, 62, 71, 73, 85, and 86 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mark ('874) in view of U.S. Patent 5,583,933, Mark ('933).

Regarding claims 39 and 71, Mark ('874) discloses "a system for transmitting a dual tone, comprising: a telephony device having a composite signal output comprising first and second components (*figure 2B, element 120 has a composite signal output as that of figure 4B*); and a signal processing system coupled to the telephony device (*figure 2B, element 112*), the signal processing system comprising, a first bandpass filter to separate the first component from the composite signal (*figure 2B, element 304*), a second bandpass filter to separate the second component from the composite signal (*figure 2B, element 306*), a first power estimator to estimate power of the separated first component (*figure 3A, where the amplitude or energy of each portion is a unique characteristic to that portion and helps to define that portion, this is carried out by element 302 of figure 2B and a further description of amplification can be found in col. 13, lines 18-35*), a second power estimator to estimate power of the separated second

component (*figure 3A and col. 13, lines 18-35, where the amplitude or energy of each portion is a unique characteristic to that portion and helps to define that portion; it should be noted that although there aren't two distinct power estimators, it would have been obvious to have two as a matter of design choice*), a first detector to determine frequency of the separated first component (*figure 2B, element 308*), a second detector to determine frequency component (*figure 2B, element 310*)."

However, Mark ('874) lacks what Mark ('933) discloses, "a first comparator to compare the determined frequency of the first component respectively to a power threshold and frequency range to determine whether the first component comprises one of the dual tones (*col. 16, lines 65-col. 17, lines 1-16 where the tables of figures 8B-8E show the acceptable and rejectable ranges for frequencies and although it is not explicitly stated that there is a first comparator to determine what tone is detected, it is strongly implied by the tables there must be one*), and a second comparator to compare the estimated power and determined frequency of the second component respectively to a power threshold and frequency range to determine whether the second component comprises the other one of the dual tones (*col. 16, lines 65-col. 17, lines 1-16 where the tables of figures 8B-8E show the acceptable and rejectable ranges for frequencies and although it is not explicitly stated that there is a second comparator to determine what tone is detected, it is strongly implied by the tables there must be one*)."

It would have been obvious to one with ordinary skill in the art at the time of invention to include the comparators for the purpose of determining if the detected frequencies are indeed within a range of acceptable frequencies. The motivation for

determining whether or not the detected frequency is within an acceptable range is so that a tone is not detected in error

Regarding claims 15, 38, and 54, Mark ('874) lacks what Mark ('933) discloses, "comparing the determined frequency of each of the separated first and second components to a plurality of frequency ranges to determine whether either of the first and second components comprises the tone (*figure 8B shows a table of acceptable frequency ranges for detecting and determining which frequency has been received; a more detailed description can be read in col. 16, lines 65-col. 17, lines 1-16*)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the frequency ranges for the purpose of rejecting tones that are outside the acceptable range. The motivation for doing this is so that there is minimal error in detecting tones properly.

Regarding claim 85, Mark ('874) further discloses, "a first power estimator to the estimate power of the separated first component (*figure 3A, where the amplitude or energy of each portion is a unique characteristic to that portion and helps to define that portion, this is carried out by element 302 of figure 2B and a further description of amplification can be found in col. 13, lines 18-35*)". However, Mark ('874) lacks what Mark ('933) further discloses, "the first comparator further comparing the estimated power of the separated first component to a power threshold, the determination of whether the separated first signal comprises said one of the tones being further a

function of the comparison (*col. 16, lines 65-col. 17, lines 1-16 where the tables of figures 8B-8E show the acceptable and rejectable ranges for frequencies and although it is not explicitly stated that there is a first comparator to determine what tone is detected, it is strongly implied by the tables there must be one*)."

It would have been obvious to one with ordinary skill in the art to include the further function of the first comparator for the same reasons and motivation as in claim 39.

Regarding claim 86, Mark ('933) lacks what Mark ('874) further discloses "first...power estimators each estimating power of a respective one of the first and second separated components (*figure 3A, where the amplitude or energy of each portion is a unique characteristic to that portion and helps to define that portion, this is carried out by element 302 of figure 2B and a further description of amplification can be found in col. 13, lines 18-35*)..." Mark ('874) however, does not explicitly disclose a "second power estimator" and "a twist estimator to compare a ratio of the estimated power for the first and second components, the determination of whether the composite signal comprises the dual tone being further a function of the comparison."

Although Mark ('874) does not disclose the "second power estimator" he does disclose a first power estimator, and since they perform the same function it would have been obvious to include another power estimator as a matter of design choice. As seen in figure 2B of Mark ('874) there are two components separated where the power has been estimated previously by element 302. It would have been obvious to one with

ordinary skill in the art at the time of invention to split the incoming signal before estimating the power, thus requiring two power estimators, as a matter of design choice.

Further, Mark ('874) does not explicitly disclose the "twist...ratio", he does disclose that the difference between the first and second components as the twist and this is compared against a threshold (*col. 13, lines 56-67*). It would have been obvious to one with ordinary skill in the art at the time of invention to have the ratio of the power estimates compared against a threshold instead of the difference as a matter of design choice. The reason is because the object of comparing the two components power estimates is to determine if they fall within an acceptable range. Whether this is done using ratios or differences is up to the designer, the same result of identifying where the components lie relative to a threshold is achieved. The motivation for wanting to know how the components compare to a threshold is so that negative effects of too much "twist" can be avoided (*Mark ('874), col. 11, lines 1-7*).

Regarding claims 23, 33, 41, 62, and 73, Mark ('874) lacks what Mark ('933) further discloses, "a frequency calculator (*figure 8B, where the frequency ranges are determined to be acceptable within the detector as shown*) that estimates a mean deviation to one of a plurality of frequencies for each of the separated first and second components and compares the estimated mean for each of the separated first and second components to a respective threshold (*col. 16, lines 65-col. 17, lines 1-16 and figure 8B shows a table of acceptable frequency ranges frequency ranges for detecting and determining which frequency has been received, and although the ranges or*

acceptability are not labeled as a "mean deviation" they can be considered as such because they represent a tolerance (deviation) surrounding a nominal (mean) frequency, thus, just as with a "mean deviation", the nominal tolerance functions to accept detected frequencies within a given range)."

It would have been obvious to one with ordinary skill in the art at the time of invention to include the frequency ranges as a "mean deviation" for the purpose of rejecting tones that are outside the acceptable range. The motivation for doing this is so that there is minimal error in detecting tones properly.

8. Claims 19, 20, 34, 36, 58, and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mark ('874) in view of U.S. Patent 5,333,191, McCarthy.

Regarding claims 20, 34, and 59 Mark ('874) lacks what McCarthy discloses, "means for converting the first and second components to complex signals prior to the frequency determination (*figure 1, elements 202-210 in conjunction with one another take the received signal from element 102 and convert it into a complex signal before detecting the tones in element 300, the process for this can be read in col. 3, lines 54- col. 8, lines 1-31 with particular emphasis on col. 8, lines 1-31 where it shows the signal in its complex form (equation 15) and how the tones are detected from that*)." It would have been obvious to one with ordinary skill in the art at the time of invention to have the signal converted to its complex form before detecting the tones for the purpose of being able to detect the tones. The motivation for converting to a complex signal to

detect the tones is one of feasibility, it is much easier to detect frequency tones in a signal by first converting it to a complex signal than it is to detect the tones from the straight received signal.

Regarding claims 19, 36, and 58, Mark ('874) lacks what McCarthy discloses, the bandpass filtering of Mark ('874) comprises "complex filtering (*figure 1, elements 202-210 in conjunction with one another take the received signal from element 102 and convert it into a complex signal before detecting the tones in element 300, the process for this can be read in col. 3, lines 54-col. 8, lines 1-31 with particular emphasis on col. 8, lines 1-31 where it shows the signal in its complex form (equation 15) and how the tones are detected from that, thus the signals are complex so is the filtering*)." It would have been obvious to one with ordinary skill in the art at the time of invention to have the complex filtering for the purpose of being able to detect the tones. The motivation for complex signal filtering to detect the tones is one of feasibility, it is much easier to detect frequency tones in a signal by first converting it to a complex signal than it is to detect the tones from the straight received signal.

9. Claims 18, 37, and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mark ('874) in view of U.S. Patent 6,393,124 B1, Tsai et al. (Tsai).

Regarding claims 18, 37, and 57, Mark ('874) lacks what Tsai discloses "means for down sampling the separated first and second components prior to the frequency determination (*figure 2, element 26 as seen comes before the detection logic 36, i.e.*

frequency determination)." It would have been obvious to one with ordinary skill in the art at the time of invention to include the down sampling for the purpose of reducing the number of samples in the signal. The motivation for reducing the number of samples in the signal is to reduce the computational load on later processing (*Tsai, col. 4, lines 18-26*).

10. Claims 44 and 76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mark ('874) and Mark ('933) as applied to claims 39 and 71 above, and further in view of Tsai et al.

Regarding claims 44 and 76, Mark ('874) and Mark ('933) lack what Tsai discloses, "a first down sampler to down sample the separated first component prior to the first power estimation and frequency determination (*figure 2, element 26 as seen comes before the detection logic 36, i.e. frequency determination*)..." Tsai however, does not explicitly disclose "a second down sampler to down sample the separated second component prior to the frequency determination by the second detector."

Although Tsai does not disclose the "second down sampler" he does disclose a first down sampler, and since they perform the same function it would have been obvious to include another down sampler as a matter of design choice. As seen in figure 2 of Tsai there are two components that have been separated where the down sampling has taken place. It would have been obvious to one with ordinary skill in the art at the time of invention to split the incoming signal before down sampling, thus requiring two down sampler, as a matter of design choice.

It would have been obvious to one with ordinary skill in the art at the time of invention to include the down sampling for the purpose of reducing the number of samples in the signal. The motivation for reducing the number of samples in the signal is to reduce the computational load on later processing (*Tsai, col. 4, lines 18-26*).

11. Claims 42, 43, 74, and 75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mark ('874) and Mark ('933) as applied to claims 39 and 71 above, and further in view of McCarthy.

Regarding claims 42 and 74, Mark ('874) and Mark ('933) lack what McCarthy discloses, "a first summer to convert the separated first component to a first complex signal prior to the first power estimation and frequency determination (*figure 1, elements 202-210 in conjunction with one another take the received signal from element 102 and convert it into a complex signal before detecting the tones in element 300, the process for this can be read in col. 3, lines 54-col. 8, lines 1-31 with particular emphasis on col. 8, lines 1-31 where it shows the signal in its complex form (equation 15) and how the tones are detected from that*), and a second summer to convert the separated second component to a second complex signal prior to the second power estimation and frequency determination (*although McCarthy does not disclose a second "summer" to convert the signal to its complex form, he does disclose the first "summer", therefore it would have been obvious to one with ordinary skill in the art at the time of invention to include the second summer if there had been two components because each*

component would need to be converted and as a matter of design choice, two "summers" would be faster than one)."

It would have been obvious to one with ordinary skill in the art at the time of invention to have the signal converted to its complex form before detecting the tones for the purpose of being able to detect the tones. The motivation for converting to a complex signal to detect the tones is one of feasibility, it is much easier to detect frequency tones in a signal by first converting it to a complex signal than it is to detect the tones from the straight received signal.

Regarding claims 43 and 75, Mark ('874) and Mark ('933) lack what McCarthy discloses, the bandpass filtering of Mark ('874) and Mark ('933) comprises "complex filtering (*figure 1, elements 202-210 in conjunction with one another take the received signal from element 102 and convert it into a complex signal before detecting the tones in element 300, the process for this can be read in col. 3, lines 54-col. 8, lines 1-31 with particular emphasis on col. 8, lines 1-31 where it shows the signal in its complex form (equation 15) and how the tones are detected from that, thus the signals are complex so is the filtering*)." It would have been obvious to one with ordinary skill in the art at the time of invention to have the complex filtering for the purpose of being able to detect the tones. The motivation for complex signal filtering to detect the tones is one of feasibility, it is much easier to detect frequency tones in a signal by first converting it to a complex signal than it is to detect the tones from the straight received signal.

Response to Arguments

12. Applicant's arguments, see REMARKS, page 26, second paragraph, filed 1 December 2004, with respect to the objections to the IDS filed 19 August 2002 and 20 July 2001 have been fully considered and are persuasive. The objections of the IDS's have been withdrawn.

13. Applicant's arguments, see REMARKS, page 26, third paragraph, filed 1 December 2004, with respect to the objections to the drawings have been fully considered and are persuasive. The objections of the drawings have been withdrawn.

14. Applicant's arguments, see REMARKS, page 26, fourth paragraph, filed 1 December 2004, with respect to the objection to the abstract have been fully considered and are persuasive. The objection of the abstract has been withdrawn.

15. Applicant's arguments, see REMARKS, page 26, fifth paragraph, filed 1 December 2004, with respect to the objections to claims 3, 5, 7, 13, 14, 39, 42, 46, 52, 66, and 78-88 have been fully considered and are persuasive. The objections to claims 3, 5, 7, 13, 14, 39, 42, 46, 52, 66, and 78-88 have been withdrawn.

16. Applicant's arguments filed 1 December 2004 have been fully considered but they are not persuasive.

Regarding independent claims 1, 8, 46, 64, and 81 (and thusly dependent claims 3-7, 15, 17-21, 23, 27-29, 33-38, 48-52, 54, 56-60, 62, 66-70, 78-80 and 87-88) applicant makes the following arguments:

1) The prior does not disclose the "separating one of the components... sampling a portion of the separated component... and detecting from the sampled portion of the separated component... the tone;"

2) The transmitted signal is not a composite signal as recited in the claims;

3) Mark ('874) does not disclose "'whether the separated component comprises the tone,' because the alleged components of FIG. 4B are already part of the tone signal."

The examiner respectfully disagrees.

1) As disclosed in the above rejections, Mark ('874) fully discloses a signal containing components, which when received must be separated. This is strongly implied by figures 4A and 4B. As in figure 4A, the data is transmitted from the telephone 4 and received at the central switch. This transmitted signal is seen as in figure 4B. Since there are varying components to the signal of figure 4B, each must be separated out so that it may be appropriately processed. The system does not take the signal of figure 4B as a whole and treat it as one piece of data, it must separate the different components out. Further, it is well known in the art that analog signals transmitted over a medium, such as from telephone 4 to the central switch in figure 4A, are sampled at the receiving end to convert them to digital data. This is the very nature of digital communications and inherently disclosed in Mark ('874).

2) As noted above, figure 4B shows the signal above shows a composite signal with different components.

3) Since the tones are already part of the signal in Mark ('874) as in figure 4B, would it not be obvious to then detect those signals for further use? Is that not the point of transmitting the signals? Further, figure 2C of Mark ('874) clearly shows the receiving end taking the transmitted signal and separating the tones from the signal in element 426, where the tones can come from a variety of different components as seen in figure 4B.

Regarding independent claims 39 and 71 (and thusly dependent claims 41-44, 73-76, and 85-86), applicant makes the following arguments:

1) The prior art of record does not show "a first bandpass filter...and a second bandpass filter;"

2) The transmitted signal is not a composite signal as recited in the claims;

3) The frequency detectors of Mark ('933) only detect DTMF tones and therefore do not detected a tone from a composite signal.

The examiner respectfully disagrees.

1) As seen in Mark ('874), figure 2B, elements 304 and 306 are filters which are used to filter different frequencies from the signal. Although these filters are not specifically labeled as bandpass filters, they effectively function as such. As is known in the art, the frequency spectrum is symmetric about the vertical axis at 0Hz. As such, any frequencies filtered by element 304, for instance, will create a band of passed

frequencies at the low end of the spectrum. A similar effect happens with element 306. Therefore, there are effectively two bandpass filters disclosed in Mark ('874).

2) As noted above, figure 4B shows the signal above shows a composite signal with different components.

3) First, Mark ('933) does is not cited as disclosing the frequency detectors, Mark ('874) is used for those limitations. Second, although a DTMF tone may consist of two tones, it is still a tone. As noted in the rejections above, Mark ('874) fully discloses detecting this DTMF tone by detecting each low and high tone pair in the DTMF tone.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joshua Kading whose telephone number is (571) 272-3070. The examiner can normally be reached on M-F: 8:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau Nguyen can be reached on (571) 272-3126. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Joshua Kading
Examiner
Art Unit 2661

May 27, 2005

CHAU NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

Continuation of Disposition of Claims: Claims pending in the application are 1-15,17-21,23,27-31,33-39,41-44,46,48-54,56-60,62,64,66-71,73-76 and 78-88.